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PREVENTIVE DENTAL SERVICES FOR INFANTS AND SUBSEQUENT UTILIZATION OF DENTAL SERVICES

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A Thesis submitted in partial fulfillment of the requirements for the degree of Masters of Science in Dentistry at Virginia Commonwealth University.

by

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Abstract

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UTILIZATION OF DENTAL SERVICES

By Elizabeth Jane Berry, D.D.S.

A Thesis submitted in partial fulfillment of the requirements for the degree of Masters of Science in Dentistry at Virginia Commonwealth University.

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The purpose of this study was to examine the use of dental services for young children following a preventive oral health intervention in a pediatric medical clinic. Over a 3 year period (2005-2008), children 0-36 months of age, enrolled in Medicaid, were provided preventive oral health services in a medical setting. Descriptive statistics and multivariate logistic regression were used to determine the effect receiving the preventive oral health services in a medical setting with the outcomes of dental utilization. 15% were determined to have dental caries at the intervention and 42% found to have a dental visit post-intervention. Children determined to have decay at the intervention were significantly

more likely to have one or more restorative or adjunctive service post-intervention. After receiving preventive oral health care in a medical clinic, the resulting utilization of dental services was higher than what is commonly reported for dental utilization in infant populations of low-income children.

Introduction

Early childhood caries (ECC) has been reported by the Centers for Disease Control and Prevention to be the most prevalent infectious disease among US children. Dental caries is 5 times more common than asthma and 7 times more common than hay fever in children[1] Overall, oral health is improving for most children in the United States, but there is an increase in tooth decay among preschool children. Tooth decay for children 2 to 5 years of age has increased from 24 percent to 28 percent between 1988 to 1994 and 1999 to 2004.[2,3] Dental caries left untreated can cause pain, discomfort, infection, decrease in weight, loss of self esteem, and adverse effects to the permanent dentition.[4] Children that encounter dental problems lose an estimated 52 million school hours each year.[1] Approximately 7.5%(4.7 million) United States children have at least one unmet health care need; with dental care being that most prevalent unmet health care need.[5] Interventions are needed to prevent these young children from developing dental decay to prevent future dental and health complications.

Preventive interventions in the early years of a child's life can produce the greatest long-term benefits and cost saving.[6] Early dental visits provide counseling on infant oral

hygiene, fluoride therapies, dietary counseling, and information relative to oral habits and injury prevention.[7] Children that have preventive dental visit by age one are more likely to use preventive services which has been shown to be cost effective.[7] The expenditures on children that receive a dental visit at a younger age also have a positive effect on dentally related expenditures. The average dentally related cost is less for children with earlier preventive care.[8] Early preventive oral health services can help promote the establishment of a dental home for a child.

A dental home provides the child and parents with continuous and comprehensive services and should be established while the child is young to provide preventative treatment.[9] The AAPD (American Academy of Pediatric Dentistry) and ADA (American Dental Association) policy statements encourage caregivers and healthcare professionals to help children establish a dental home by 12 months of age.[10] The AAP (American Academy of Pediatrics) states that infants should be seen by a dentist 6 months after their first tooth erupts or by 12 months of age. Establishing a dental home was derived from the AAP concept of establishing a medical home. The dental home provides an opportunity to incorporate healthy dental habits and prevention of dental caries.[11] The dental home provides anticipatory guidance, increasing the parent's knowledge on important oral health issues dependent on the child's age.[10,11,12]

There is a link between the parent's dental knowledge and child's oral health. Parents with dental knowledge are less likely to have children with dental caries.[13] Parents that have a lack of knowledge about the importance of preventive services are less likely to

utilize dental services available.[14] An increase in parent's knowledge of their child's oral health could potentially decrease the dental caries prevalence among children.

This study examined preventive oral health services administered in a medical setting to children 0 to 36 months of age. The Children's Pavilion at VCU Health System offers pediatric ambulatory services to children. A collaboration was created in 2005 between the departments of Pediatrics and Pediatric Dentistry to provide preventive oral health services and promote in the establishment of a dental home for high risk infants. Currently, pediatric dental residents in conjunction with pediatric medical residents provide preventive oral health services to children 0-36 months of age at the Children's Pavilion. The preventive oral health intervention at the VCU Children's Pavilion consists of infant oral health anticipatory guidance, a knee-to-knee exam, caries risk assessment, and fluoride varnish treatment. The parents are encouraged to establish a dental home and given a referral for pediatric dental services.

The purpose of this study is to examine the likelihood of a dental visit post-intervention in addition to assessing if children identified as having dental disease at the intervention were more or less likely to have a dental visit, and what dental services were received.

Specific Aims:

1. Likelihood of a dental visit and description of dental services
2. Children identified as high risk for dental decay more or less likely to have a dental visit and description of services

3. Children identified as having dental decay more or less likely to have a dental visit and description of services

Methods

Study Design

This is a secondary data analysis of a cohort of infants (0-36months of age) who received preventive oral health services in the pediatric ambulatory medical clinic at VCU's Children's Pavilion from 2005 to 2008. Over a 3 year period (2005-2008) n=495 children 0-36 months of age received preventive oral health services. Preventive oral health services were provided to children consisted of 1) knee-to-knee oral screenings and risk assessment 2) oral health anticipatory guidance for caregivers and 3) fluoride varnish treatments. Administrative eligibility and dental claims data were obtained for the children enrolled in Medicaid (n=304). Children were linked to their Medicaid eligibility and dental claims using their name, Medicaid number, and date of birth. The utilization of dental services was examined by the presence of dental claims and category of dental services. The protocol for this investigation was approved for Human Subjects by the Institutional Review Board at Virginia Commonwealth University.

Prevention Oral Health Intervention

Preventive oral health services and data collection were completed by pediatric dental residents. The dental residents were trained and calibrated on how to provide the preventive intervention according to the VDH Bright Smiles for Children program.[15] The oral screening consisted identification of the presence of caries/decay, white spot lesions, soft tissue pathology, and pain or infection in mouth. The patient was categorized, using the caries-risk assessment, as high risk if a positive finding was found with any of the following: not seeing a dentist, early tooth eruption, no primary spacing, well water/suboptimal fluoride exposure, bottle in bed with milk/juice, and special health care needs. The primary independent variables were receiving the preventive oral health services, high-risk (yes or no) and the presence of decay (yes or no). Control variables included age (in months), race (African American, Other), and enrollment (in days) and dental utilization prior to the date of their prevention oral health intervention. Descriptive statistics were used to identify potential outliers, determine appropriate cut-points to categorize variables, and to test statistical assumptions that will guide subsequent analysis.

Analysis of Specific Aims:

1. Descriptive statistics
2. Bivariante analysis
3. Multivariante logistic regression

The outcome of dental utilization was measured according to whether a child had any dental claims, signifying a dental visit, and then these claims were be also categorized according to the procedure type: diagnostic, preventive, restorative, surgery, complex, or adjunctive. ADA CDT procedure codes were used to classify individual services as diagnostic, preventive, restorative, surgery, complex, or adjunctive (Table 1).

Descriptive characteristics of the cohort were examined and multivariate logistic regression models built to determine the least biased estimate of effect separately for the independent variables (risk status, and decay status) and dental utilization. Logistic regression models were adjusted for sex (male or female), race (Black, Other), age (in months), and enrollment (in days) and dental utilization prior to the intervention. (SAS, version 9.2, SAS Institute, Inc.).

Results

Descriptive

The population of children that received the infant oral health intervention were 51% female and 49% male, primarily African American (81%), and a mean age of 19 months (Table 3)

A large proportion of the population was determined to be at high-risk for the development of dental caries (52%) at the intervention. Caries was detected in 15% of the population with 11% having white-spot decalcifications and 8% having frank decay. Fifteen percent of the caregivers reported that their child had received dental services. The mean number of dental visits for the population was 0.77% (range= 0-6) Overall 42% of the population received dental care post-intervention with 39% receiving preventive services, 10% diagnostic services, 11% restorative services, 2% surgery/extraction services, 3% complex services, and 9% adjunctive services. (Tables 2,3,4,5)

Bivariante Analysis

Logistic regression was used to determine the relationship between decay status and risk status with the outcome of dental utilization (unadjusted). Dental visits

(OR=2.035, CI=1.078, 3.84), preventive services (OR=1.889, CI=1.003, 3.554), restorative services (OR=4.609, CI=2/097, 10.132), complex services (OR=3.937, CI=1.066, 14.542), and adjunctive services (OR=4.382, CI=1.897, 10.122) were found to be associated with having dental caries at the intervention. Children identified to have dental caries at the intervention were not more likely to receive diagnostic or surgery/extraction services post-intervention. Children identified to be high-risk at the intervention we not more likely to receive any dental services compared to children that were not high-risk.

Multivariante Logistic Regression

Dental Services

Overall 42% of the intervention group received dental services post-intervention (n=124). Table 7 presents the data provided by the logistic regression model to determine the odds of receiving dental services post-intervention. Children identified as having dental caries or being 'high risk' were no more or less likely to receive dental services post-intervention. Enrollment in days was also found to be associated with receiving dental care; with every day increase in enrollment, there is a 0.5% increase chance in receiving dental services.

Preventive Services

Overall 39% of the population received preventive services post-intervention (n=116). Table 8 presents the data provided by the logistic regression model to determine the odds of receiving preventive services post intervention. Children categorized as having either dental caries or 'high-risk' were no more or less likely to receive preventive services

post-intervention. Enrollment in days was found to be associated with receiving preventive dental services; with every day increase in enrollment there was a 0.5 % increase in receiving preventive services.

Diagnostic Services

Overall 10% of the population received diagnostic services post-intervention (n=120). Table 9 presents the data provided by the logistic regression model to determine the odds of receiving diagnostic services post-intervention. Children categorized as having either dental caries or 'high-risk' were no more or less likely to receive diagnostic services post-intervention. Enrollment duration (in days) was found to be associated with receiving diagnostic services; with every day increase in enrollment there was a 0.5 % increase in receiving diagnostic services. High risk and age in months were not found to be of significant.

Restorative Services

Overall 11% of the population received restorative services post-intervention (n=33). Table 10 presents the data provided by the logistic regression model to determine the odds of receiving restorative services post-intervention. Children categorized as having either dental caries or 'high-risk' were no more or less likely to receive restorative services post-intervention. A child identified to have caries at the time of the intervention was found to be 2.974 (CI = 1.139, 7.764) times more likely to receive one or more restorative services post-intervention. Enrollment duration (in days) was found to be associated with receiving diagnostic services; with every day increase in enrollment there was a 0.5 % increase in receiving diagnostic services. Children that had prior dental utilization were

found to be 4.706 (CI = 1.795, 12.336) times more likely to receive one or more restorative visit post-intervention.

Surgery/Extraction Services

Overall 2% of the population received surgery/extraction services post-intervention (n=5). Table 11 presents the data provided by the logistic regression model to determine the odds of receiving surgery/extraction services post-intervention. Children categorized as having either dental caries or 'high-risk' were no more or less likely to receive surgery/extraction services post-intervention. Age in months was the only factor found to show significant; with every months increase in age there was a 13% increase in receiving a surgery/extraction procedure post-intervention.

Complex Service

Overall 3% of the population received complex services post-intervention (n=10). Table 12 presents the data provided by the logistic regression model to determine the odds of receiving complex services post-intervention. Children categorized as having either dental caries or 'high-risk' were no more or less likely to receive complex services post-intervention. Enrollment in days was found to have significance; with every day increase in enrollment there as a 0.6% increase in receiving complex services. Children that had prior dental utilization were found to be 4.929 (CI = 1.048, 23.187) times more likely to receive one or more complex visit post-intervention.

Adjunctive Services

Overall 9% of the population received adjunctive services post-intervention (n=28). Table 13 presents the data provided by the logistic regression model to determine the odds

of receiving adjunctive services post-intervention. Children categorized as having either dental caries or 'high-risk' were no more or less likely to receive adjunctive services post-intervention. A child identified to have caries at the time of the intervention was 2.797 (CI= 1.075, 7.281) times more likely to receive one or more adjunctive service. Enrollment duration (in days) was found to be associated with receiving diagnostic services; with every day increase in enrollment there was a 0.4 % increase in receiving adjunctive services. Children that had prior dental utilization were found to be 3.366 (CI = 1.251, 9.054) times more likely to receive one or more adjunctive visit post-intervention.

Discussion

Oral health prevention has been an increased concerned for younger children especially 2 to 5 years of age. Training of pediatric primary care providers has shown to be promising in prevention of dental caries. Pierce et al found that after 2 hours of training pediatric primary care providers there was an increase in identification of and dental caries and the pediatrician was accurately directing the child to the dentist.[16] Rozier et al found that the statewide program in North Carolina, Into the Mouths of Babies, encourages pediatricians to provide preventive dental services and has increased access to preventive dental services for young Medicaid children.[17] Minah et al found that low-income children that received oral health preventative measures within a primary care pediatric clinic reduced caries experience.[18] These studies show the promise of providing preventive oral health within a medical setting, there is still limited information regarding the effectiveness of these interventions. This study focuses on having a trained oral health professional available in a medical setting to provide a preventive oral health services to children to prevent delayed dental care and thus a decreased chance of development of dental caries.

Overall this study showed that children identified to have dental caries at the intervention were more likely to have one or more restorative or adjunctive services. It

appears to make sense that those children with dental caries at the intervention were more likely to receive restorative or adjunctive services. These children had an overall utilization rate of 42%, which is a utilization rate much higher then what is typically reported for this age group of 0-36 months. A child identified as 'high-risk' at the intervention was no more or less likely to have dental services than a child not identified to be 'high-risk.' This again may be the result of the prevention intervention where all children were encouraged to establish a dental home regardless of their oral health status. Length of enrollment was found to have a positive association with most dental services. The children that had been enrolled in Medicaid longer were more likely to receive dental services then children with shorter Medicaid enrollment. Prior utilization was also found to have a positive association with receiving certain dental services. A child with a history of dental claims was more likely to utilize dental services post-intervention. Age in months was found to have a positive association with receiving surgery/extraction services post-intervention. The older the child was, the more likely they would receive surgery/extraction procedures.

This study does have limitations. The study population includes young children, primarily African American, having Medicaid insurance. Therefore, this sample cannot be generalized to the US population, but only those that reflect the same characteristics. The sample size is also small and therefore the analysis is limited. The high-risk indicator was determined on the basis of the AAPD guidelines Caries Risk Assessment Tool but may not include all variables that could contribute to making a child high-risk for dental caries. The care-giver was primarily responsible for giving accurate information to the pediatric

dental resident and caregivers may not give accurate information therefore creating response bias.

Future investigations are needed that would encapsulate a time-dependent analysis of dental claims and a comparison of dental utilization to a control group of children that would be a propensity score matched sample of same age Medicaid recipients.

Conclusion

In conclusion, significant levels of decay and white-spot lesions were found in this population of very young children (0-36 months). The utilization of dental services for these children was high after the intervention (42%). Children that were identified to be 'high-risk' were no more likely to receive dental services post-intervention than children not classified as 'high-risk.' Children that were determined to have decay at the intervention were significantly more likely to receive one or more restorative or adjunctive services post-intervention than children not identified to have dental caries. Length of enrollment, age in months, and prior utilization of dental services were found to have a significant positive association with dental utilization.

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Literature Cited

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Table 1: Applicable American Dental Association CDT Dental Procedure Codes for Preventive, Diagnostic and Restorative Services

Dental Service	Code	Description
Preventive	D1120	prophylaxis- child
	D1201	topical fluoride application (including prophylaxis)- child
	D1203	topical fluoride application (not including prophylaxis)- child
	D1310	nutritional counseling for control do dental disease
	D1330	oral hygiene instructions
	D1351	sealant
Diagnostic	D0120	periodic oral evaluation
	D0140	limited oral evaluation- problem focused
	D0150	comprehensive oral evaluation- new or established patient
	D0160	detailed and extensive oral evaluation- problem focused
	D0170	re-evaluation- limited, problem focused
Restorative	D2140	amalgam- one surface, primary or permanent
	D2150	amalgam- two surfaces, primary or permanent
	D2160	amalgam- three surfaces, primary or permanent
	D2160	amalgam- four or more surfaces, primary or permanent
	D2330	resin-based composite- one surface, anterior
	D2331	resin-based composite- two surfaces, anterior
	D2332	resin-based composite- three surfaces, anterior
	D2335	resin-based composite- four or more surfaces, or incisal angle (anterior)
	D2390	resin-based composite crown, anterior
	D2391	resin-based composite- one surface, posterior
	D2392	resin-based composite- two surfaces, posterior
	D2393	resin-based composite- three surfaces, posterior
	D2394	resin-based composite- four or more surfaces, posterior
	D2930	prefabricated stainless steel crown- primary tooth
	D2932	prefabricated resin crown
	D2933	prefabricated stainless steel crown with resin window

Table 2: Applicable American Dental Association CDT Dental Procedure Codes for Surgery/Extraction, Complex, and Adjunctive Services

Dental Service	Code	Description
Surgery/Extraction	D7140	extraction, erupted tooth or exposed root
	D7111	coronal remnants- deciduous tooth
Complex	D3110	pulp cap- direct (exlcluding final restoration)
	D3120	pulp cap- indirect (excluding final restoration)
	D3220	theuropeutic pulpotomy (excluding final restoration)
	D3221	pulpal debridement, primary and permanent teeth
	D3230	pulpal therapy(resorbable filing)- anterior, primary tooth
	D3240	pulpal therapy(resorbable filling)- posterior, primary tooth
	D4210	gingivectomy or gingivoplasty
	D6985	immediate denture- maxillary
	D5140	immediate denture- mandibular
	D6985	pediatric partial denture, fixed
	D8010	limited orthodontic treatment of primary dentition
Adjunctive	D9110	palliative (emergency) treatment of dental pain, minor procedure
	D9220	deep sedation/ general anesthesia- first 30 minute
	D9221	deep sedation/ general anesthesia- each additional 15 minutes
	D9230	analgesia, anxiolysis, inhalation of nitrous oxide
	D9241	intravenous conscious sedation/analgesia- first 30 minutes
	D9242	intravenous conscious sedation/analgesia- each additional 15 minutes
	D9248	non-intravenous conscious sedation
	D9310	consultation
	D9420	hospital call
	D9920	behavior management, by report

Table 3: Descriptive characteristics and dental services received post-intervention (n=304).

Oral Health Service	%	Mean (range)
fluoride varnish	86	
anticipatory guidance	100	
dental visit	42	0.77(0-6)
preventive	39	1.13(0-8)
diagnostic	10	0.98(0-8)
restorative	11	0.44(0-17)
complex	3	0.05(0-2)
surgery/extraction	2	0.03(0-4)
adjunctive	9	0.18(0-8)

Table 4: Demographic characteristics of population that received oral health intervention (n=304).

Demographics:	**%**
Gender	
female	50
male	50
Race	
White	3
African American	81
Hispanic	13
Other	3
Age	
age 0 to 12 months	23
age 12 to 24 months	46
age 24 to 36 months	28

Table 5: Risk and Dental Health Status of population that received oral health intervention (n=304).

Risk Status	% Yes	% No
high risk	52	48
plaque	12	88
pathology	4	96
pain	1	98
currently seeing a dentist	15	85
early tooth eruption	12	88
crowding	12	88
family decay	35	65
snacking > 3 times a day	28	72
suboptimal fluoride exposure	17	83
bottle to bed	33	67
special needs	4	96
Dental Health Status		
decay	8	92
decalcification	11	89
decay or decalcification	15	85

Table 6: Bivariante Analysis of decay versus dental services (n=304)

Bivariante Analysis: Decay versus dental services	**OR (95%CI)**
Dental Services	2.035(1.078, 3.84)
Preventive Services	1.889(1.003, 3.554)
Diagnostic Services	1.766(0.939, 3.320)
Restorative Services	4.609(2.097, 10.132)
Surgery/Extraction Services	1.389(0.152, 12.714)
Complex Services	3.937(1.066, 14.542)
Adjunctive Services	4.382(1.897, 10.122)

Table 7: Logistic Regression Model for Dental Services

Dental Services	Parameter Estimate	SE	P-value	Odds Ratio (95% CI)
Intercept	-2.3877	0.5432	<0.0001	
Decay				
Yes	0.2267	0.2066	0.2725	1.574(0.700, 3.537)
No	0	0		1
Age (months)	0.0238	0.0159	0.1337	1.024(0.993, 1.056)
Enrollment Duration (days)	0.00508	0.000686	<0.0001	1.005(1.004, 1.006)
Race				
Black	-0.00586	0.1881	0.9751	0.988(0.473, 2.066)
Other (ref)	0	0	0	1
Gender				
Male	0.0341	0.1417	0.8099	1.071(0.614, 1.866)
Female (ref)	0	0	0	1
Pre-utilization				
Yes	0.4567	0.2363	0.0533	2.493(0.987, 6.295)
No (ref)	0	0	0	1
High Risk				
Yes	-0.1051	0.142	0.4595	0.819(0.464, 1.414)
No (ref)	0	0	0	1

Table 8: Logistic Regression Model for Preventive Services

Preventive Services	Parameter Estimate	SE	P-value	Odds Ratio (95% CI)
Intercept	-2.7568	0.5374	<0.0001	
Decay				
Yes	0.1879	0.1999	0.3472	1.456(0.665, 3.189)
No	0	0		1
Age (months)	0.0291	0.0157	0.0639	1.029(0.998, 1.062)
Enrollment Duration (days)	0.00478	0.1867	<0.0001	1.005(1.004, 1.006)
Race				
Black	-0.00487	0.1867	0.9792	0.990(0.476, 2.058)
Other (ref)	0	0	0	1
Gender				
Male	0.1292	0.1402	0.3571	1.295(0.747, 2.243)
Female (ref)	0	0	0	1
Pre-utilization				
Yes	0.1808	0.2187	0.4084	1.436(0.609, 3.384)
No (ref)	0	0	0	1
High Risk				
Yes	-0.1303	0.1402	0.3527	0.771(0.445, 1.335)
No (ref)	0	0	0	1

Table 9: Logistic Regression for Diagnostic Services

Diagnostic Services	Parameter Estimate	SE	P-value	Odds Ratio (95% CI)
Intercept	-2.4725	0.5315	<0.0001	
Decay				
Yes	0.1595	0.202	0.4299	1.376(0.623, 3.037)
No	0	0		1
Age (months)	0.0187	0.0156	0.232	1.019(0.988, 1.051)
Enrollment Duration (days)	0.00488	0.000671	<0.0001	1.005(1.004, 1.006)
Race				
Black	-0.0123	0.185	0.9469	0.976(0.472, 2.015)
Other (ref)	0	0	0	1
Gender				
Male	0.095	0.1395	0.4957	1.209(0.700, 2.089)
Female (ref)	0	0	0	1
Pre-utilization				
Yes	0.2582	0.2223	0.2454	1.676(0.701, 4.005)
No (ref)	0	0	0	1
High Risk				
Yes	-0.1335	0.1397	0.3393	0.766(0.443, 1.324)
No (ref)	0	0	0	1

Table 10: Logistic Regression for Restorative Services

Restorative Services	Parameter Estimate	SE	P-value	Odds Ratio (95% CI)
Intercept	-5.1278	1.0332	<0.0001	
Decay				
yes	0.5449	0.5449	0.026	2.974 (1.139, 7.764)
no (ref)	0	0		1
Age				
Age (months)	0.0393	0.0246	0.1106	1.040 (0.991, 1.092)
Enrollment duration (days)	0.00489	0.00104	<0.0001	1.005 (1.003, 1.007)
Race				
Black	0.5515	0.4201	0.1893	3.013 (0.581, 15.637)
Other (ref)	0	0		1
Gender				
Male	-0.1645	0.2242	0.3632	0.720 (0.299, 1.733)
Female (ref)	0	0		1
Pre-utilization				
Yes	0.7744	0.2459	0.0016	4.706(1.795, 12.336)
No	0	0		1
High Risk				
yes	-0.1102	0.2238	0.6225	0.802(0.334, 1.929)
no (ref)	0	0		1

Table 11: Logistic Regression for Surgery/extraction Services

Surgery/extraction services	Parameter Estimate	SE	P-value	Odds Ratio (95% CI)
Intercept	-8.4398	2.5511	0.0009	
Decay				
Yes	-0.0486	0.6104	0.9365	0.907(0.083, 9.930)
No	0	0		1
Age (months)	0.1208	0.0578	0.0367	1.128(1.007, 1.264)
Enrollment Duration (days)	0.003	0.0023	0.1924	1.003(0.998, 1.008)
Race				
Black	-0.3171	0.6328	0.6163	0.530(0.044, 6.337)
Other (ref)	0	0	0	1
Gender				
Male	-0.5219	0.5771	0.3658	0.352(0.037, 3.381)
Female (ref)	0	0	0	1
Pre-utilization				
Yes	0.6899	0.5082	0.1746	3.974(0.542, 29.137)
No (ref)	0	0	0	1
High Risk				
Yes	-0.1102	0.6219	0.1513	0.169(0.015, 1.936)
No (ref)	0	0	0	1

Table 12: Logistic Regression for Complex Services

Complex services	Parameter Estimate	SE	P-value	Odds Ratio (95% CI)
Intercept	-11.7447	146.1	0.9359	
Decay				
Yes	0.3342	0.3908	0.3925	1.951(0.422, 9.029)
No	0	0		1
Age (months)	-0.0174	0.044	0.6926	0.983(0.902, 1.071)
Enrollment Duration (days)	0.00603	0.0019	0.0015	1.006(1.002, 1.010)
Race				
Black	6.1166	146.1	0.9666	>999.99(<0.001, >999.99)
Other (ref)	0	0	0	1
Gender				
Male	-0.1645	0.2242	0.4632	1.266(0.306, 5.233)
Female (ref)	0	0	0	1
Pre-utilization				
Yes	0.7744	0.2459	0.0016	4.929(1.048, 23.187)
No (ref)	0	0	0	1
High Risk				
Yes	-0.1102	0.2238	0.6225	0.611(0.146, 2.548)
No (ref)	0	0	0	1

*Validity of model fit is questionable

Table 13: Logistic Regression for Adjunctive Services

Adjunctive services	Parameter Estimate	SE	P-value	Odds Ratio (95% CI)
Intercept	-4.0667	0.9168	<0.0001	
Decay				
Yes	0.5143	0.244	0.0351	2.797(1.075, 7.281)
No	0	0		1
Age (months)	0.0238	0.25	0.3413	1.024(0.975, 1.076)
Enrollment Duration (days)	0.00368	0.000965	0.0001	1.004(1.002, 1.006)
Race				
Black	0.1383	0.348	0.691	1.319(0.337, 5.160)
Other (ref)	0	0	0	1
Gender				
Male	-0.1812	0.2262	0.4233	0.696(0.287, 1.690)
Female (ref)	0	0	0	1
Pre-utilization				
Yes	0.6068	0.2525	0.0162	3.366(1.251, 9.054)
No (ref)	0	0	0	1
High Risk				
Yes	0.0222	0.2255	0.9214	1.045(0.432, 2.531)
No (ref)	0	0	0	1

APPENDIX A

ORAL HEALTH SCREENING AND FLUORIDE VARNISH FORM

VCU Medical Center
Virginia Commonwealth University

VCU DEPARTMENT OF PEDIATRIC DENTISTRY

Child's Name_____DOB_____Sex: M F Medicaid #_____

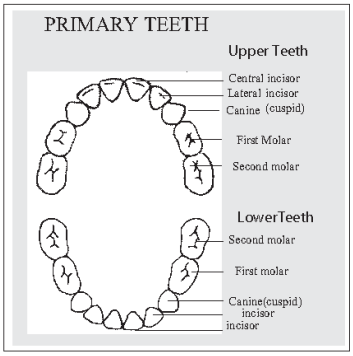
Address_____

Phone_____/_____

Caregiver's Name_____

Date of Screening_____

Chart Label



Any visible cavities/decay ☐ yes ☐ no

Any white spot lesions ☐ yes ☐ no

Visible Plaque on teeth/poor oral hygiene ☐ yes ☐ no

Any Intraoral Soft Tissue Pathology (ulcers, mucocele, inflamed gingiva) ☐ yes ☐ no

Pain or Infection in Mouth (abscess) ☐ yes ☐ no

Has child ever been to the Dentist ☐ yes ☐ no

Dentist Name_____

Risk Assessment

(Check if affirmative)

☐ Early tooth eruption <6 months

☐ No primary spaces/crowding

☐ Decay in Parents or Siblings in the past 5 yrs.

☐ Frequent snacking (3 or more/day)

☐ Well water/suboptimal Fluoride exposure

☐ Bottle in bed with milk/juice

☐ Special Health Care Needs

High Risk ☐ **yes** ☐ **no**

Procedures

Fluoride varnish applied? ☐ yes ☐ no

Dental Appointment Made for High Risk ☐ yes ☐ no Date_____

VITA

I was born in Richmond, Virginia 1981. I attended Virginia Tech where I obtained a B.S. in Biochemistry, minor in Chemistry, and graduated with honors. I attended dental school at MCV/VCU where I received a D.D.S. in 2003. I am currently completing my Masters in Public Health at MCV/VCU with an expectant graduate date of 2009. I am also currently a Pediatric Dental Resident at MCV/VCU with an expectant graduate date of 2009. I plan to fulfill a career in teaching, public health, and practicing pediatric dentistry.